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(54) Title: GENETIC COMPUTING USING COMBINATORIAL TRANSCRIPTION CONTROL

(57) Abstract: A scheme is provided for selecting the regulatory DNA sequences to exert combinatorial control of gene transcription in vivo by multiple regulatory proteins, i.e., transcription factors (TFs). The method provides the ability to implement a wide range of complex logic functions through the manipulation of the regulatory DNA sequences, typically several hundred bases in length. The method includes procedures for selecting the strengths of the binding sites of different TFs and their relative positioning in order to implement a plurality of different logic functions.

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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/38995

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC(7) : C12P 21/02; C12N 1/00, 5/02, 15/63 US CL : 435/69.1, 375, 455 According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) U.S. : 435/69.1, 375, 455  Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Please See Continuation Sheet		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,814,618 (BUJARD ET AL) 29 September 1998 (29.09.1998), see entire document.	1-7, 11-17, 21-24
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Y		8-10, 18-20
Y	WO 94/12015 (CHUA ET AL) 09 June 1994 (09.06.1994), see entire document.	8-10, 18-20
Y	US 5,968,773 (HEDDLE ET AL) 19 October 1999 (19.10.1999), see entire document.	8-10, 18-20
Y	US 5,834,236 (LAMB ET AL) 10 November 1998 (10.11.1998), see entire document.	8-10, 18-20
Y	US 5,942,433 (VINSON ET AL) 24 August 1999 (24.08.1999), see entire document.	8-10, 18-20
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
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"E"	earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed	
Date of the actual completion of the international search 22 February 2005 (22.02.2005)		Date of mailing of the international search report <b>11 MAR 2005</b>
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230		Authorized officer <i>Jamulal Shabana</i> Terry A. McKelvey Telephone No. 703-308-0196

**INTERNATIONAL SEARCH REPORT**

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**Continuation of B. FIELDS SEARCHED Item 3:**

EAST (USPAT, PGPUB, EPO, JPO, Derwent databases), Dialog OneSearch (biotech databases)

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